Appendix F

Reasonably Foreseeable Development Scenario Calculations

Although at this time it is unknown when, where, or if future oil and gas exploration and development might be proposed on any leased parcel, should a lease be issued, site specific analysis of individual wells, roads, pipelines and/or other facilities would occur when a lease holder submits an APD. For the purposes of this analysis, the BLM assumed oil and gas development would continue to occur as projected in the Monticello planning area “Reasonably Foreseeable Development Scenario (RFD) for Oil and Gas” (Vanden Berg, 2005), and the Moab planning area “Reasonably Foreseeable Development Scenario for Oil and Gas” (McClure, Nothrup, Fouts, 2005), and the Canyon Country District “Reasonably Foreseeable Development Scenario for Oil and Gas in the Moab Master Leasing Plan Area” (McDougall, Jones, 2012). However, the projections made in the Monticello and Moab RFDs assumed that “all potentially productive areas are open for leasing under standard lease terms and conditions except those area designated as closed to leasing by law, regulation or executive order.” The Monticello and Moab Resource Management Plans (RMPs), approved in 2008, incorporate Timing Limitation, Controlled Surface Use, and No Surface Occupancy stipulations on the majority of BLM administered lands. These stipulations would logically reduce the amount of drilling from the projections made in the respective RFDs. Additionally, for the purposes of this analysis, the BLM assumed that oil and gas development would occur proportionate to acres of oil and gas leases authorized.

- Assumptions used in determining the RFD for 2018 Oil and Gas Lease Sale:
    - BLM lands in this RFD include BLM surface and split estate (private, Navajo Indian) lands with federal oil and gas mineral estate.
    - The RFD projections are based in part on past leasing and drilling activity.
    - Drilling activity will occur on lands with authorized oil and gas leases, therefore;
    - Drilling activity and surface disturbance from the proposed action will be proportionate based on the acreage of the proposed action and current authorized lease acreage.

The following tables show the adjustments made to the Monticello and Moab RMP RFDs based on the acreage included in the Moab Master Leasing Plan area.

Monticello FO RMP RFD Acreage

Land Status	Lands included in the RFD	Percent Leaseable Acreage	Lands removed by Moab MLP	Lands remaining in the RDF	Percent Leaseable Acreage
BLM	1,398,271	38	203,943	1,194,328	35
State	202,318			202,318	
Indian Reservation	1,278,473			1,278,473	
Private	353,515			353,515	
US Forest Service	319,932			319,932	
Glen Canyon Nat. Rec. Area	101,720			101,720	
Total	**3,654,229**			**3,450,286**	

Moab FO RMP RFD Acreage

Land Status	Lands included in the RFD	Percent Leaseable Acreage	Lands removed by Moab MLP	Lands remaining in the RDF	Percent Leaseable Acreage
BLM	1,821,374	68	579,438	1,241,936	60
State	346,542			346,542	
Indian Reservation	198,106			198,106	
Private	156,199			156,199	
US Forest Service	141,241			141,241	
Total	**2,663,462**			**2,084,024**	

MLP RFD Acreage

Land Status	Lands included in the RFD	Percent Leaseable Acreage
BLM	783,381	83
State	126,281	
State Parks	4,377	
Private	32,430	
Total	**946,469**	

The following calculations determine the percentage of 2018 lease parcel acreage would make of total authorized oil and gas leases.

Monticello Field Office

Authorized Leases	166,032	
Preliminary list	30,342	15%
Total	202,047	

Moab Field Office

Authorized leases	420,380	
Preliminary list	10,525	2%
Total	430,905	

Monticello Field Office Area

The MtFO RFD was prepared for the Monticello planning area to predict the level of oil and gas development over the next 15 years for the purpose of analyzing impacts from oil and gas development to other resources in the MtFO RMP. Applying the MtFO RFD analysis to current conditions provides the following:

- BLM lands available for oil and gas leasing and development represent 35% of the total acreage available to oil and gas leasing and development in the RFD area (i.e. MtFO RFD acreage minus State of Utah lands, private lands, Indian reservation lands, USFS lands, National Park lands, National Recreation Area lands, and BLM lands within the Moab MLP).

- Over the next 15 years, 195 wells would be drilled on all lands within the Monticello planning area;

- For projection purposes, we assume wells would be uniformly distributed across the BLM lands that are available for oil and gas leasing and development. Therefore, of the 195 wells projected in the RFD, 68 wells (35% of 195) are projected to be drilled on BLM lands managed by the MtFO over the next 15 years.
- Each well and associated roads and pipelines would result in approximately 9.6 acres of surface disturbance (four acres for well pad construction; six acres for roads, pipelines, other facilities).
- Over the next 15 years, new oil and gas exploration and development activities on BLM lands would cause surface disturbance of 653 acres (68 wells × 9.6 acres = 653 acres).
- The MtFO RFD projected that 27 of the 195 wells drilled would be successfully revegetated over the 15-year projection period. However, it also assumed that successful revegetation takes ten years to achieve successful revegetation. Because any newly issued leases would have a primary term of 10 years—insufficient to achieve successful revegetation—the acreage of surface disturbance has not been reduced to account for any successful revegetation.

Currently in the MtFO:

- At the present time (2017.06.29) there are approximately 166,032 acres under authorized federal oil and gas lease.
- The Monticello Field Office March 2018 lease parcels total approximately 30,342 acres.
- If all offered parcels were sold and leases issued, the March 2018 leases would amount to 15% of the authorized oil and gas leases in the MtFO (166,032 + 30,342 = 196,374; 30,342 ÷ 196,374≈ 15%).
- 68 MtFO RFD predicted wells ÷ 15 years = 5 wells per year × 15% ≈ 0.75 well per year resulting from the March 2018 lease sale.
- Surface disturbance resulting from March 2018 lease sale oil and gas exploration and development would occur over a 10-year period (period of a lease not held by production). Accordingly, BLM anticipates 8 wells to be drilled on parcels included in this sale. The corresponding surface disturbance over the lease period is estimated to be ~77 acres (8 wells × 9.6 acres per well).

Moab Field Office Area

The MFO RFD was prepared for the Moab planning area to predict the level of oil and gas development over the next 15 years for the purpose of analyzing impacts from oil and gas development to other resources in the MFO RMP. Applying the RFD analysis to current conditions provides the following:

- BLM lands in the MFO available for oil and gas leasing and development represent 60% of the total acreage available to oil and gas leasing and development in the RFD area (i.e. RFD acreage minus State of Utah lands, private lands, Indian reservation lands, USFS lands and BLM lands within the Moab MLP).

- Over the next 15 years, the RFD projected 390 wells would be drilled on all lands within the Moab planning area.
- For projection purposes, we assume wells would be uniformly distributed across the BLM lands that are available for oil and gas leasing and development. Therefore, of the 390 wells projected in the RFD, 234 wells (60% of 390) are projected to be drilled on BLM lands over the next 15 years.
- Each well and associated roads and pipelines would result in approximately 15 acres of surface disturbance (five acres for well pad construction; 10 acres for roads, pipelines, other facilities).
- The MFO RFD projected that 58 of the 390 wells drilled would be successfully revegetated over the 15-year projection period. However, it also assumed that successful revegetation takes ten years to achieve successful revegetation. Because any newly issued leases would have a primary term of 10 years—insufficient to achieve successful revegetation—the acreage of surface disturbance has not been reduced to account for any successful revegetation.

Currently in the MFO:

- There are approximately 420,380 acres under authorized oil and gas lease at the present time (2017.06.29).
- The Moab Field Office March 2018 lease parcels total approximately 10,525 acres.
- If all offered parcels were sold and leases issued, the March 2018 leases would amount to 2% of the authorized oil and gas leases in the MFO (420,380 + 10,525 = 430,905; 10,525 ÷ 430,905 ≈ 2%).
- 234 projected wells ÷ 15 years = 16 wells per year × 2 % ≈ 0.3 well per year resulting from the March 2018 lease sale.
- Surface disturbance resulting from March 2018 lease sale oil and gas exploration and development would occur over a 10-year period (period of a lease not held by production). Accordingly, BLM anticipates ~3 wells to be drilled on parcels included in this sale. The corresponding surface disturbance over the lease period is estimated to be ~45 acres (~3 wells × 15 acres per well).

Canyon Country District Summary

The following table summarizes the predicted well development and surface disturbance resulting from the March 2018 Oil and Gas Lease Sale.

CCDO Predicted Oil and Gas Exploration and Development; and Surface Disturbance

Area	Predicted Wells Per Year	Total Predicted Wells (10 years)	Surface Disturbance per (Acres/Well)	Total Surface Disturbance (10 years)
Monticello Field Office	0.75	8	9.6	77 acres
Moab Field Office	0.32	3	15	45 acres
Canyon Country District Total	≈ 1	≈11	--	122 acres

The total estimated surface disturbance for both field offices from exploration, development and production activities resulting from the proposed March 2018 lease sale is 122 acres. This amounts to 0.30 % of the acreage included in the lease sale (122 acres of surface disturbance ÷ 40,876 acres in lease sale = 0.30%).